

**Tab 1: BOB STUMP NATIONAL DEFENSE AUTHORIZATION  
ACT FOR FISCAL YEAR 2003, Section 1207**

**SEC. 1207. MONITORING OF IMPLEMENTATION OF 1979 AGREEMENT  
BETWEEN THE UNITED STATES AND CHINA ON COOPERATION IN SCIENCE  
AND TECHNOLOGY.**

**(a) IN GENERAL.**--The Secretary of State shall--

- (1) monitor the implementation of the Agreement specified in subsection (c);
- (2) keep a systematic account of the protocols to the Agreement;
- (3) coordinate the activities of all agencies of the United States Government that carry out cooperative activities under the Agreement; and
- (4) ensure that all activities conducted under the Agreement comply with applicable laws and regulations concerning the transfer of militarily sensitive technologies and dual-use technologies.

**(b) RESPONSIBILITIES OF THE OFFICE OF SCIENCE AND TECHNOLOGY  
COOPERATION.**--Except as otherwise provided by the Secretary of State, the functions of the Secretary under this section shall be carried out through the Director of the Office of Science and Technology Cooperation of the Department of State.

**(c) AGREEMENT DEFINED.**--For purposes of this section, the term ``Agreement" means the agreement between the United States and the People's Republic of China known as the ``Agreement between the Government of the United States of America and the Government of the People's Republic of China on Cooperation in Science and Technology", signed in Washington on January 31, 1979, and its protocols.

**(d) BIENNIAL REPORT TO CONGRESS.**--(1) Not later than April 1 of each even-numbered year, the Secretary of State shall submit to Congress a report on the implementation of the Agreement and on activities under the Agreement. Each such report shall be submitted in both classified and unclassified form, as necessary.

(2) Each report under this subsection shall provide an evaluation of the benefits of the Agreement to the economy, to the military, and to the industrial base of the People's Republic of China and shall include the following:

(A) An accounting of all activities conducted under the Agreement since the previous report (or, in the case of the first report, since the Agreement was entered into) and a projection of activities to be undertaken under the Agreement during the next two years.

(B) An estimate of the costs to the United States to administer the Agreement during the period covered by the report.

(C) An assessment of how the Agreement has influenced the foreign and domestic policies of the People's Republic of China and the policy of the People's Republic of China toward scientific and technological cooperation with the United States.

(D) An analysis by the Director of Central Intelligence of the involvement of military specialists, weapons specialists, and intelligence specialists of the People's Republic of China in the activities of the Joint Commission established under the Agreement and in other activities conducted under the Agreement.

(E) A determination by the Secretary of Defense, developed with the assistance of the Director of Central Intelligence, of the extent to which the activities conducted under the Agreement have enhanced the military and defense industrial base of the People's Republic of China, and an assessment of the effect that projected activities under the Agreement for the next two years, including the transfer of technology and know-how, could have on the economic and military capabilities of the People's Republic of China.

(F) An assessment by the Inspector General of the Department of Commerce of--

(i) the extent to which programs or activities carried out under the Agreement provide access to technology, information, or know-how that could enhance military capabilities of the People's Republic of China; and

(ii) the extent to which those programs or activities are carried out in compliance with export control laws and regulations of the United States, especially those laws and regulations governing so-called ``deemed exports".

(G) Any recommendations of the Secretary of State, Secretary of Defense, or Director of Central Intelligence for improving the monitoring of the activities of the Joint Commission established under the Agreement.

(3) The Secretary of State shall prepare each report under this subsection in consultation with the Secretary of Defense, the Secretary of Energy, the Director of Central Intelligence, the Director of the Federal Bureau of Investigation, and the Director of the National Science Foundation.

**(e) INTERAGENCY WORKING GROUP.**--The President shall establish an interagency working group to oversee the implementation of the Agreement by departments and agencies of the United States. The working group shall consist of representatives of such departments, agencies, and offices of the executive branch as the President considers appropriate. The working group shall perform the following functions:

(1) Assisting the Secretary of State and other appropriate officials in setting standards under the Agreement for science and technology transfers between the United States and the People's Republic of China.

(2) Monitoring ongoing programs and activities under the Agreement and recommending future programs and activities under the Agreement.

(3) Developing a comprehensive database of all government-to-government programs and United States Government-funded programs under the Agreement.

(4) Coordinating activities under the Agreement between United States Government agencies, including elements of the intelligence community, as appropriate.

**Tab 2: Joint Commission Meeting and Executive Secretaries' Meeting  
Minutes, 2002**

**U.S.-PRC Joint Commission on Scientific and Technological Cooperation  
Minutes of the 10th Meeting**

**Beijing, April 25-26, 2002**



Xu Guanhua, Minister of Science and Technology of the People's Republic of China, and John Marburger, Director of the Office of Science and Technology Policy in the Executive Office of the President of the United States of America, co-chaired the 10th meeting of the U.S.-PRC Joint Commission on Scientific and Technological Cooperation (hereinafter referred to as the JCM) April 25-26 in Beijing. The Joint Commission was established by the Agreement Between the Government of the United States of America and the Government of the People's Republic of China on Cooperation in Science and Technology, signed at Washington, D.C., on January 31, 1979, to plan, coordinate, monitor and facilitate bilateral cooperation in science and technology.

Participants included high-ranking officials with strong scientific credentials from the U.S. and Chinese governments. Discussions focused on the following topics: (1) Energy and Physical Sciences; (2) Ecosystem and Environmental Sciences; (3) Life and Health Sciences; (4) Agricultural and Food Sciences; and (5) Science Education and Public Outreach; and (6) Cooperation Mechanisms and Methods. In each of these areas, participants briefly reviewed ongoing cooperation activities, identified issues of mutual interest and explored possible areas for future cooperation. Name lists of delegations and agenda are attached to these minutes as appendices. The meeting was conducted in a pragmatic style, in the spirit of seeking common ground.

**Overview:**

Minister Xu welcomed Dr. Marburger and the U.S. delegation to Beijing and noted the tremendous potential for U.S.-China cooperation in science and technology. He referred to the common understanding reached by President George Bush and President Jiang Zemin in February to strengthen cooperation and exchanges in areas such as economy and trade, energy, science and technology, and HIV/AIDS prevention and treatment. Minister Xu said U.S.-China S&T cooperation had developed smoothly since 1979, achieving some good results and contributing to mutual understanding, as well as to social and economic development. He said there was huge potential to expand cooperation and called for increased exchanges among U.S. and Chinese S&T leaders, renowned scientists and young scientists. He said China's entry into the World Trade Organization would enhance Chinese participation in global scientific efforts and create possibilities for cooperation in broader areas.

Dr. Marburger noted that science and technology formed the basis for human prosperity and a more secure world, and invited JCM participants to identify projects for joint investigation that would have significant impacts on both societies, stressing the importance of inter-agency cooperation.

**Energy and Physical Sciences:**

Both sides expressed satisfaction with ongoing cooperation in areas such as fossil energy, energy efficiency and renewable energy, high-energy physics and other basic scientific research and hoped to strengthen cooperation in those areas. It was agreed that, as the world's two largest energy consumers, both relying on imported petroleum, China and the United States shared a strong interest in developing cleaner energy sources to meet their development needs while protecting the environment and the global climate. There was strong interest expressed on both sides in cooperating on nanotechnology, nuclear fusion, plasma physics, genomics, catalysis, quantum computation and controls, photonics and treatment of nuclear waste. A policy discussion on creating the infrastructure for a hydrogen energy economy was also proposed. Other potential areas mentioned for expanded cooperation included electric and fuel-cell vehicles, new materials, science and technology policy and clean coal technology.

**Ecosystem and Environmental Sciences:**

Experts from both sides agreed that coping with global environmental problems required international and multi-disciplinary collaboration on research, monitoring, evaluation and control strategies. The U.S. side described its expanded inter-agency climate research program, intended to enhance the strong scientific basis underpinning its climate change policy. China was invited to participate in future expansions of U.S. global climate observation systems. The Chinese side reported on ongoing efforts in climate, ocean and ecosystem monitoring, with emphasis on natural disaster prediction and mitigation, pollution monitoring and control, strengthening environmental management, protecting water resources, forests, wetlands and wildlife, preventing soil erosion and sustainably developing China's Western regions. There was additional discussion of cooperation on microbial genomics as it applies to ecosystem studies. China was invited to participate in U.S.-led global data-gathering networks, such as the National Ecological Observation Network (NEON) and the International Long-Term Ecological Research (ILTER) program, using the successful bilateral cooperation on earthquake studies as a model. It was noted that the human dimension and bio-complexity needed to be factored into environmental modeling. The Chinese side expressed interest in building on areas identified for further cooperation at previous meetings on climate science.

**Life and Health Sciences:**

The two sides discussed ongoing and expanding cooperation on HIV/AIDS and other public health problems of mutual concern. It was agreed that recent advances in genomics provided new tools making it possible to conduct systematic research on Chinese traditional medicine, and there was mutual interest in expanding work in that area. China proposed establishing a Joint Program on Genomic Science, to focus not just on gene sequencing but also bio-informatics and functional analysis. It was agreed that this area had enormous potential as the genomics revolution turns toward proteomics and new product development. China referred to the China Integrated Project on AIDS Research,

proposed to the U.S. National Institutes of Health last July, on which there is ongoing dialogue, and reported on its efforts to improve HIV/AIDS monitoring, epidemiology, education, blood safety and community care. Cooperation on studies relating health to environmental change and economic development was also discussed. Both sides noted the importance of establishing a firm ethical basis for human research and mechanisms to protect research subjects.

### **Agricultural and Food Sciences:**

Both sides expressed interest in cooperating on water conservation, dairy technology, food safety, food processing and environmental protection in agriculture, although the U.S. side said that due to limited funding it could not promise to cooperate on all of them. It was noted that the two sides would inaugurate a Joint Center of Excellence on Soil Erosion and Environmental Protection in Yangling, Shaanxi Province, in May. China sought U.S. cooperation on reducing the environmental impact of fertilizer and pesticide use, as well as on irrigation technology and management of agricultural water use. The U.S. side observed that genetically modified crops could reduce the requirements for water, pesticides and fertilizers. The Chinese side responded that its research on GMOs was continuing. It was agreed that China's Ministry of Science and Technology would coordinate U.S.-China cooperation with the 13 Chinese ministries and agencies involved in agricultural and food sciences, and MOST will pursue a memorandum of understanding with USDA.

### **Science Education and Public Outreach:**

Both sides referred to the problem of declining numbers of young students going into science and engineering fields. It was agreed that getting children interested in science at a young age was critical to maintaining an adequate S&T workforce. The impact of globalization and changing economic and social conditions on international mobility of S&T workers was also discussed. The U.S. side proposed a study group regarding S&T workforce issues. In connection with this issue, U.S. NIH reported it has a program to provide "re-entry grants" to foreign students, which allow them to maintain ties to U.S. institutions after returning to their home countries.

### **Mechanisms and Methods for U.S.-China S&T Cooperation:**

The two sides agreed that it would be useful to hold science-based meetings or forums during the interim between JCMs to discuss key topics of mutual interest and provide feedback and recommendations to the JCM. The two sides also agreed to explore mechanisms for giving researchers from each side increased access to research funding from the other side. China proposed concluding an agreement to facilitate science-based youth exchanges, and the U.S. side proposed a separate meeting to develop that idea. U.S. NSF expressed willingness to extend its existing exchange programs for young scholars to China.

Both sides noted the importance of public-private cooperation on research and development. The Chinese side described its science park project with the University of

Maryland as an example of such cooperation. The U.S. side suggested further exploring such models and policies for involving the business sector in funding S&T research and development and technology transfer. However, the focus of the JCM should be on science.

### **Conclusions:**

The two sides agreed that the following should be priority areas for future S&T cooperation: (1) Agricultural Science and Technology; (2) Clean Energy; (3) Nanotechnology; (4) Global Change; (5) Genomics; (6) Science Education; and (7) Information Technology. Each side will designate points of contact for each of these areas. At the same time, both sides underlined the importance of inter-agency cooperation in all of these areas.

Both sides agreed that the Executive Secretariat Meeting should convene soon to translate the principles and framework suggested at the JCM into concrete cooperation, leading the China-US science and technology cooperation into a more practical direction.

These Minutes were approved and signed in Chinese and English, both versions being equally authentic, by the leaders of the two delegations at the conclusion of the JCM at Beijing on April 26, 2002.

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For the United States of America:

For the People's Republic of China:

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John H. Marburger III  
Director  
Office of Science and Technology Policy  
Executive Office of the President

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Xu Guanhua  
Minister of Science and Technology

**Executive Secretaries' Meeting - Minutes**  
**U.S.-China Joint Commission on Scientific and Technological Cooperation**  
**Guilin, China**  
**November 12-14, 2002**

Jin Ju, Deputy Director-General of the Department of International Cooperation of the Ministry of Science and Technology (MOST) of the People's Republic of China, and Kay Anske, Director of the Office of Science and Technology Cooperation of the Department of State of the United States of America, in their capacity as Executive Secretary for their respective sides, co-chaired the Executive Secretaries' Meeting of the U.S.-China Joint Commission on Scientific and Technological Cooperation (hereinafter referred to as the ESM), November 12-14 in Guilin, China. The Joint Commission was established by the Agreement Between the Government of the United States of America and the Government of the People's Republic of China on Cooperation in Science and Technology, signed at Washington, D.C., on January 31, 1979, to plan, coordinate, monitor and facilitate bilateral cooperation in science and technology. The role of this ESM is to translate into concrete actions the principles and framework suggested at the 10<sup>th</sup> Joint Commission Meeting (JCM) held April 25-26, 2002 in Beijing.

There were 46 participants representing government agencies from the U.S. and China. Name lists of the delegations and the agenda are attached to these minutes as appendices.

The meeting was divided into eight sessions:

- 1) Opening;
- 2) Review and comments on U.S.-China cooperation;
- 3) Overview of active protocols;
- 4) Discussion of priority areas from the April 2002 JCM;
- 5) Role of the ESM;
- 6) Possible new areas for cooperation;
- 7) Summary reports from Session 4; and
- 8) Additional discussion.

**Session I – Opening**

Mr. Jin opened the ESM by calling for action-oriented, forward-looking contributions from all the participants. Ms. Anske noted the maturity and scope of science and technology (S&T) cooperative activities and said it is natural for some areas of cooperation to thrive and other areas to outlive their usefulness. Both sides agreed that the growing U.S.-China S&T cooperation is successful, mutually beneficial and promotes good bilateral relations and mutual understanding.

## **Session II – Review and Comments on U.S.-China S&T Cooperation**

Mr. Jin said that the April JCM gave a clear direction to S&T policy and identified priority areas for cooperation. Mr. Jin described the progress that has been made in some of these priority areas, and said that the ESM should focus on implementing actions in JCM priority areas. Mr. Jin referred to the protocols as vertical integration of S&T policy, and the JCM priority areas as horizontal integration, and that together the protocols and priority areas form a matrix for S&T cooperation. Mr. Jin said that while S&T cooperation is good, there is still much room for expansion. He also called for working together to minimize difficulties with visa issues. The Ministry of Foreign Affairs delegate followed Mr. Jin's presentation by briefing the meeting on general bilateral relations between the two countries. An U.S. Embassy representative extended greetings from the U.S. Ambassador to China, noting that the ESM is an important forum for implementing U.S.-China cooperative activities.

## **Session III – Overview of Active Protocols**

Protocols in the following areas were reviewed: (1) Agriculture; (2) Oceans and Fisheries; (3) Atmospheric Science; (4) Water Resources; (5) Basic Science; (6) Seismology; (7) Natural Protection and Conservation; (8) Health; (9) Transportation; (10) Quantitative Standards; (11) High Energy Physics; (12) Surveying and Mapping; (13) Energy Resources; (14) Civil Industrial Technologies; (15) Scientific Information; (16) Nuclear Physics; and (17) the Peaceful Uses of Nuclear Technology Agreement. In each of these areas, participants briefly reviewed recent accomplishments, identified current concerns, and mentioned possible areas for future cooperation. Several protocols have been renewed recently or will be renewed in the near future. Implementation has varied. Some protocols are very active and growing, others are inactive or in a steady state. Questions were raised on the best way to coordinate projects to minimize redundancy while preserving sufficient flexibility in the process. Some delegates suggested that further discussion of standardized reporting and data would be useful. Several Chinese delegates mentioned that problems with obtaining U.S. visas have become a serious obstacle to U.S.-China cooperation. The Ministry of Communications expressed regret over the stagnation of the Communications Protocol, and expressed their interest in more active concrete cooperation.

## **Session IV – Discussion of JCM Priority Areas**

The ESM split into groups for in-depth discussion of seven priority areas identified at the JCM, as well as the area of water resources, added at the request of the U.S. side. The areas are: (1) Agriculture Science and Technology; (2) Nanotechnology; (3) Water Resources; (4) Science Education; (5) Clean Energy; (6) Information Technology; (7) Global Change; and (8) Genomics. Oral reports were presented in Session VII. Detailed reports, once reviewed and approved by the chairpersons of the respective groups, will be presented in an annex to these minutes and are an integral part of this document.

## **Session V – Role of the ESM**

Ms. Anske said that the JCM has changed its role to focus more on high-level policy issues, and consequently the ESM's role is now to translate those principles into details and actions. Mr. Jin said that the ESM should be a driving force for implementation and should be forward-looking and action-oriented. He suggested a flexible timetable for future ESMs based on needs at the time. Ms. Anske suggested that a standardized format for S&T Protocols be developed, and that this would assist in preparation. Mr. Jin also said that the ESM should do more outreach to inform other agencies and levels about its work. He noted the institutional differences between the U.S. and other countries in funding S&T, stressed the need for flexibility on both sides, and called for exploring ways to more rationally use existing funding. It was suggested that the ESM analyze why some protocols are successful and others are not. Mr. Jin commented that the in-depth discussion of JCM priority area was a successful experiment. Ms. Anske agreed with Mr. Jin's comments on outreach. One delegate commented that distribution of relevant materials prior to the ESM would make the time spent at the ESM more effective.

## **Session VI – Possible New Areas for Cooperation, and Discussion of Current Issues and Problems:**

- ◆ MOST presented its plans to promote data sharing in basic science through policies, standards, methods, and regulations. The U.S. side expressed interest in this idea. There was general agreement that data sharing is an important concept, and that specific projects should be developed through a working group, perhaps with a focus on data access policy.
- ◆ USDA explained the “joint center” mechanism that USDA used to create the Yangling Joint Center on Soil and Water Conservation and Environmental Protection.

The U.S. Embassy briefed the meeting on visa problems. He said there are three types of visa problems: 1) problems stemming from the “Foreign Affairs Office” system, where the location of a passport cannot be easily determined because it passes through so many hands; 2) problems related to the requirement under U.S. law that applicants demonstrate that they are not intending to immigrate (“214b” problem), and 3) the new requirement that applicants in certain job categories receive an affirmative clearance from Washington. Some difficulties stem from problems in transitioning to the new policies, and those problems should be diminishing.

## **Session VII – Summary Reports from “Break-Out” Sessions**

Oral reports were presented by one co-chair from each of the discussion groups in Session IV. Written reports from each session are attached to these minutes. Some common themes from the reports: continued S&T cooperation is very valuable to both sides; some new agreements are almost ready to be signed; many new projects are being developed; and, projects need to be approved and coordinated internally before

commitments can be made. Several groups proposed that expert-level working groups convene to develop specific proposals. Information on points of contact was exchanged, and next steps will be developed in consultation between the relevant points of contact. The role of industry is an issue that needs to be considered in many S&T projects.

### **Session VIII – Questions, Answers, and General Discussion**

One issue is the status of the Water Resources Working Group. USDA promised to review this issue and report back to the Chinese side. The U.S. Embassy requested additional consultation on clearances for research vessels. MOST noted that China welcomes joint U.S.-China proposals to its “973” research program. The State Forestry Administration expressed the hope to see representatives from the U.S. Forest Service and the U.S. Fish and Wildlife Service at future ESM’s. A MOST delegate suggested that detailed project proposals be distributed prior to future ESM’s.

### **Conclusions:**

The Executive Secretaries agreed that through the efforts of both delegations and supporting staff, the ESM was productive and useful, that progress had been made in many areas, and that frank discussion of problems and unresolved issues had taken place. There have been accomplishments, but much can still be done to develop and improve on the work that has been done. Problems will be faced with a positive attitude. The U.S. side looks forward to welcoming the Chinese delegation to the next ESM in the U.S. The S&T relationship between China and the U.S. is broad and deep, contributes to the welfare of both societies, and to their mutual respect and friendship.

These minutes were approved and signed by the leaders of the two delegations at the conclusion of the ESM at Guilin on November 14, 2002.

For the United States of America:

For the People's Republic of China:

\_\_\_\_\_/s/\_\_\_\_\_  
Kay Anske  
Director  
Office of Science and Technology Cooperation  
Department of State

\_\_\_\_\_/s/\_\_\_\_\_  
Jin Ju  
Deputy Director-General  
Department of International Cooperation  
Ministry of Science and Technology

**China-U.S. ESM 2002**  
**November 12-14**  
**Agenda**

**Tuesday, November 12**

0830 - **Session I:** Opening Ceremony:

Welcome and Opening Remarks, Introduction of Delegation:

Jin Ju, China Exec Sec

0845 - Opening Remarks, Introduction of Delegation:

Kay Anske, U.S. Exec Sec

0900 - **Session II:** Review of and Comments on China-U.S. Cooperation,

Jin Ju, China Exec Sec with 10 minutes of discussion

0940 - Remarks by Ministry of Foreign Affairs

Wang Baodong, Ministry of Foreign Affairs

0955 - Group Photo and Tea Break

1030 - **Session III:** Overview of Active Protocols and Cooperative S&T Activities (2000-2002)

(15 minutes each, i.e. 7 minutes each side)

**Chaired by Jin Ju, China Exec Sec**

**1. Agriculture**

*China: Chen Zhixin, Ministry of Agriculture*

*U.S.: Francis Tuan, Department of Agriculture*

**2. Oceans and Fisheries**

*China: Wei Yan, State Oceanic Administration*

*U.S.: Jock Whittlesey, U.S. Embassy with NOAA notes*

**3. Atmospheric Science**

*China: Shen Xiaonong, China Meteorological Administration*

*U.S.: Julian Wang, Department of Commerce*

**4. Water Resources**

*China: Yu Xingjun, Ministry of Water Resources*

*U.S.: Richard Affleck, Department of Agriculture*

**5. Basic Science**

*China: Cao Jinghua, Chinese Academy of Sciences*

*Chen Huai, National Natural Science Foundation*

*U.S.: Bill Blanpied, National Science Foundation*

1200 - Lunch

1400 - **Session III** Continues

(15 minutes each, i.e. 7 minutes each side)

**Chaired by Kay Anske, U.S. Exec Sec**

**6. Seismology**

*China: Zhao Ming, China Seismological Bureau*

*U.S.: John Gray, Department of Interior*

**7. Natural Protection/Conservation**

*China: Huang Xiaoguang, State Forestry Administration*

*U.S.: Jock Whittlesey, U.S. Embassy*

**8. Health**

*China: None*

*U.S.: Kurt Tong, U.S. Embassy*

**9. Transportation**

*China: Du Li, Ministry of Communications*

*U.S.: None*

**10. Quantitative Standards**

*China: Kong Xiaokang, General Administration of Quality Supervision,  
Inspection and Quarantine*

*U.S.: Magdalena Navarro, Department of Commerce*

**11. High Energy Physics**

*China: Cao Jinghua, Chinese Academy of Sciences*

*U.S.: Lee Gebert, Department of Energy*

1530 - Tea Break

1545 - **Session III** Continues

*(15 minutes each, i.e. 7 minutes each side)*

**Chaired by Kay Anske, U.S. Exec Sec**

**12. Surveying and Mapping**

*China: Jiang Xiaohong, State Bureau of Surveying and Mapping*

*U.S.: John Gray, Department of Interior*

**13. Energy Resources**

*China: Zheng Fangneng, Ministry of Science and Technology*

*U.S.: Lee Gebert, Department of Energy*

**14. Civil Industrial Technologies**

*China: Zheng Fangneng, Ministry of Science and Technology*

*U.S.: None*

**15. Science Information**

*China: Duan Liping, Institute of Scientific and Technical Information of  
China*

*U.S.: Bill Blanpeid, National Science Foundation*

**16. Nuclear Physics and Magnetic Fusion**

*China: Chen Xiong, Ministry of Science and Technology*

*U.S.: Lee Gebert, Department of Energy*

**17. Peaceful Uses of Nuclear Technologies Agreement**

*China: None*

*U.S.: Lee Gebert, Department of Energy*

1800-1845 Reception hosted by the U.S. Delegation

1900-2030 Banquet hosted by: Mr. Wang Yuefei, Mayor of Guilin

### **Wednesday, November 13**

0830 - **Session IV**: Breakout Sessions: (90 minutes each subject - see Tab 1 for details)

**1. Agriculture Science and Technology**

- Joint Centers of Excellence for Natural Resource Management
- Metrology

**2. Nanotechnology**

- Tools for Nanoscale Measurements and Standards
- Nanoscale Processes and the Environment

1000 - Tea Break

1030 - **Session IV** Continues

**3. Water**

- Water Quality
- Flow Monitoring (includes flooding)
- Sediment Transport and Deposition
- International Watershed Research Network
- Economic Impact of Water Scarcity

**4. Science Education**

- Distance Learning
- Comparative Science Educator Training

1200 - Lunch

1400 - **Session IV** Continues

**5. Clean Energy**

- Energy Efficiency and Renewable Energy
- Fossil Fuels
- Air Quality

**6. Information Technology**

- Networking (especially wireless networks)
- Engineering of Software Intensive Systems (dependability emphasized)

1530 - Tea Break

1600 - **Session IV** Continues

**7. Global Change**

- Global Change Science
- Dust Storms

**8. Genomics**

- Plant Genomics
- Microbial Genomics

1815 - Banquet hosted by Mr. Jin Ju, China Exec Sec

2000 - Boat trip on Two Rivers & Four Lakes

## **Thursday, November 14**

0830 - **Session V:** Role of the ESM

**Chaired by Kay Anske, U.S. Exec Sec**

0900 - **Session VI:** Possible New Areas for Cooperation and Discussion of Current Issues and Problems in S&T Relations

**Chaired by Jin Ju, China Exec Sec**

Chinese Topics:

- Basic Data Sharing - Chen Xiong, Ministry of Science and Technology

U.S. Topics:

- Enhancement of Data Sharing - Sylvana Li, Department of Agriculture
- Joint Centers for Natural Resource Management and Environment - Scott Christiansen, Department of Agriculture
- Potential Collaboration on Surface Water Hydrology – John Gray, Department of Interior

**Discussion of other topics in this session is greatly encouraged.**

1000 - Tea Break

1030 - **Session VII:** Summary Reports from the Breakout Sessions

**Chaired by Kay Anske, U.S. Exec Sec**

1115 - **Session VIII:** Questions, Answers, and General Discussion

**Chaired by Jin Ju, China Exec Sec**

1200 - Closing Remarks

Jin Ju, China Exec Sec

Kay Anske, U.S. Exec Sec

1230 - Lunch

1400 - Optional site visit to Institute of Karst Geology, Seven Star Park and Ludi Karst Cave

1800 - Signing Ceremony of Minutes on ESM

1830 - Dinner

## **Friday, November 15**

0815 - Departure for optional Li river cruise

1800 - Dinner

Venue: Rong Hu Hotel

Address: 17 North Ronghu Road, Guilin, China

Tel: +86-773-2893811

Fax: +86-773-2825456

### *Tab 1: Detailed Breakout Sessions*

#### **1. Agriculture Science and Technology**

- Joint Centers of Excellence for Natural Resources Management
- Metrology

**Chinese chair:** Wei Qinfang, Ministry of Science and Technology

**U.S. chair:** Francis Tuan, Department of Agriculture

#### **Chinese participants:**

Wang Weizhong, China Agenda 21 Administration Center

Kong Xiaokang, General Administration of Quality Supervision, Inspection and Quarantine

Chen Zhixin, Ministry of Agriculture

Lv Xuedu, Ministry of Science and Technology

Huang Jing, China Agenda 21 Administration Center

Yu Xingjun, Ministry of Water Resources

Song Guangxia, Ministry of Health

Ma Yongzheng, Ministry of Land and Resources

Qiu Weili, Chinese Academy of Sciences

Huang Xiaoguang, State Forestry Bureau

Jiang Xiaohong, State Bureau of Surveying and Mapping

Wang Qinghua, State Administration of Work Safety

#### **U.S. participants:**

Julian Wang, Department of Commerce

Richard Affleck, Department of Agriculture

Jentai Yang, Environmental Protection Agency

Sylvana Li, Department of Agriculture

John Gray, Department of Interior

Jock Whittlesey, U.S. Embassy

Christo Artusio, Department of State

Scott Christiansen, Department of Agriculture

#### **2. Nanotechnology**

- Tools for Nanoscale Measurements and Standards
- Nanoscale Processes and the Environment

**Chinese chair:** Chen Huai, National Natural Science Foundation

**U.S. chair:** Bill Blanpied, National Science Foundation

#### **Chinese participants:**

Shen Xiaonong, China Meteorological Administration

Li Ming, National Natural Science Foundation

Cao Jinghua, Chinese Academy of Sciences

Li Yongwei, Ministry of Science and Technology

Zheng Fangneng, Ministry of Science and Technology

Chen Shuoyi, Hi-tech Research and Development Center

Geng Jiandong, Hi-tech Research and Development Center

Chen Xiong, Ministry of Science and Technology

Duan Liping, Institute of Scientific and Technical Information of China

Du Li, Ministry of Communications

Zhao Ming, China Seismological Bureau

Luan Huixin, Ministry of Information Industry

Wang Yanqing, State Environmental Protection Administration

**U.S. participants:**

Kurt Tong, U.S. Embassy  
Magdalena Navarro, Department of Commerce  
Lee Gebert, Department of Energy  
Kay Anske, Department of State

**3. Water**

- Water Quality
- Flow Monitoring (includes flooding)
- Sediment Transport and Deposition
- International Watershed Research Network
- Economic Impact of Water Scarcity

**Chinese chair:** Wang Weizhong, China Agenda 21 Administration Center

**U.S. chair:** John Gray, Department of Interior  
Richard Affleck, Department of Agriculture

**Chinese participants:**

Kong Xiaokang, General Administration of Quality Supervision, Inspection and Quarantine  
Shen Xiaonong, China Meteorological Administration  
Yu Xingjun, Ministry of Water Resources  
Lv Xuedu, Ministry of Science and Technology  
Huang Jing, China Agenda 21 Administration Center  
Chen Zhixin, Ministry of Agriculture  
Wei Qinfang, Ministry of Science and Technology  
Huang Xiaoguang, State Forestry Administration  
Chen Xiong, Ministry of Science and Technology  
Zheng Fangneng, Ministry of Science and Technology  
Ma Yongzheng, Ministry of Land and Resources  
Wang Yanqing, State Environmental Protection Administration  
Wang Qinghua, State Administration of Work Safety

**U.S. participants:**

Jentai Yang, Environmental Protection Agency  
Sylvana Li, Department of Agriculture  
Francis Tuan, Department of Agriculture  
Jock Whittlesey, U.S. Embassy  
Christo Artusio, Department of State  
Lee Gebert, Department of Energy  
Scott Christiansen, Department of Agriculture

**4. Science Education**

- Distant Learning
- Comparative Science Educator Training

**Chinese chair:** Li Yongwei, Ministry of Science and Technology

**U.S. chair:** Bill Blanpied, National Science Foundation

**Chinese participants:**

Li Ming, National Natural Science Foundation  
Cao Jinghua, Chinese Academy of Sciences  
Chen Huai, National Natural Science Foundation  
Qiu Weili, Chinese Academy of Social Sciences  
Geng Jiandong, Hi-tech Research and Development Center

Chen Shuoyi, Hi-tech Research and Development Center  
Duan Liping, Institute of Scientific and Technical Information of China  
Du Li, Ministry of Communications  
Luan Huixin, Ministry of Information Industry  
Jiang Xiaohong, State Bureau of Surveying and Mapping  
Zhao Ming, China Seismological Bureau  
Song Guangxia, Ministry of Health

**U.S. participants:**

Kay Anske, Department of State  
Julian Wang, Department of Commerce  
Magdalena Navarro, Department of Commerce  
Kurt Tong, U.S. Embassy

**5. Clean Energy**

- Energy Efficiency and Renewable Energy
- Fossil Fuels
- Air Quality

**Chinese chair:** Zheng Fangneng, Ministry of Science and Technology

**U.S. chair:** Lee Gebert, Department of Energy  
Jentai Yang, Environmental Protection Agency

**Chinese participants:**

Li Ming, National Natural Science Foundation  
Wang Weizhong, China Agenda 21 Administration Center  
Cao Jinghua, Chinese Academy of Sciences  
Wang Yanqing, State Environmental Protection Administration  
Du Li, Ministry of Communications  
Wei Qinfang, Ministry of Science and Technology  
Lv Xuedu, Ministry of Science and Technology  
Chen Zhixin, Ministry of Agriculture  
Chen Xiong, Ministry of Science and Technology  
Yu Xingjun, Ministry of Water Resources  
Song Guangxia, Ministry of Health  
Chen Huai, National Natural Science Foundation  
Huang Xiaoguang, State Forestry Administration  
Huang Jing, China Agenda 21 Administration Center  
Chen Shuoyi, Hi-tech Research and Development Center

**U.S. participants:**

Julian Wang, Department of Commerce  
John Gray, Department of Interior  
Christo Artusio, Department of State  
Sylvana Li, Department of Agriculture  
Kurt Tong, U.S. Embassy  
Kay Anske, Department of State  
Scott Christiansen, Department of Agriculture

## **6. Information Technology**

- Networking (especially wireless network)
- Engineering of Software Intensive Systems (dependability emphasized)

**Chinese chair:** Geng Jiandong, Hi-tech Research and Development Center

**U.S. chair:** Bill Blanpied, National Science Foundation

### **Chinese participants:**

Shen Xiaonong, China Meteorological Administration  
Kong Xiaokang, State General Administration of Quality Supervision, Inspection and Quarantine  
Luan Huixin, Ministry of Information Industrialization  
Duan Liping, Institute of Scientific and Technical Information of China  
Li Yongwei, Ministry of Science and Technology  
Qiu Weili, Chinese Academy of Social Sciences  
Wang Qinghua, State Administration of Work Safety  
Jiang Xiaohong, State Bureau of Surveying and Mapping  
Ma Yongzheng, Ministry of Land and Resources  
Zhao Ming, China Seismological Bureau

### **U.S. participants:**

Magdalena Navarro, Department of Commerce  
Francis Tuan, Department of Agriculture  
Jock Whittlesey, U.S. Embassy  
Richard Affleck, Department of Agriculture

## **7. Global Change**

- Global Change Science
- Dust Storms

**Chinese chair:** Shen Xiaonong, China Meteorological Administration

**U.S. chair:** Christo Artusio, Department of State  
Julian Wang, Department of Commerce

### **Chinese participants:**

Wang Weizhong, China Agenda 21 Administration Center  
Lv Xuedu, Ministry of Science and Technology  
Wei Qinfang, Ministry of Science and Technology  
Wang Yanqing, State Environmental Protection Administration  
Zhao Ming, China Seismological Bureau  
Qiu Weili, Chinese Academy of Social Sciences  
Ma Yongzheng, Ministry of Land and Resources  
Huang Xiaoguang, State Forestry Administration  
Li Yongwei, Ministry of Science and Technology  
Yu Xingjun, Ministry of Water Resources  
Du Li, Ministry of Communications  
Luan Huixin, Ministry of Information Industry  
Jiang Xiaohong, State Bureau of Surveying and Mapping

### **U.S. participants:**

Jentai Yang, Environmental Protection Agency  
Lee Gebert, Department of Energy  
Richard Affleck, Department of Agriculture  
Kurt Tung, U.S. Embassy  
John Gray, Department of Interior  
Scott Christiansen, Department of Agriculture

## **8. Genomics**

- Plant Genomics
- Microbial Genomics

**Chinese chair:** Cao Jinghua, Chinese Academy of Sciences

**U.S. chair:** Francis Tuan, Department of Agriculture

### **Chinese participants:**

Kong Xiaokang, State General Administration of Quality Supervision, Inspection and Quarantine

Li Ming, National Natural Science Foundation

Chen Huai, National Natural Science Foundation

Chen Xiong, Ministry of Science and Technology

Song Guangxia, Ministry of Health

Chen Zhixin, Ministry of Agriculture

Zheng Fangneng, Ministry of Science and Technology

Huang Jing, China Agenda 21 Administration Center

Duan Liping, Institute of Scientific and Technical Information of China

Wang Qinghua, State Administration of Surveying and Mapping

Geng Jiandong, Hi-tech Research and Development Center

Chen Shuoyi, Hi-tech Research and Development Center

### **U.S. participants:**

Bill Blanpied, National Science Foundation

Magdalena Navarro, Department of Commerce

Sylvana Li, Department of Agriculture

Kay Anske, Department of State

Jock Whittlesey, U.S. Embassy

## **Remarks at the Opening Ceremony of 2002 China-US ESM**

November 12, 2002, Guilin, China

Jin Ju, Deputy Director General

Department of International Cooperation, Ministry of Science and Technology

Distinguished Ms. Kay Anske,  
Distinguished delegates:

Good morning!

Now, I am honored to announce the inauguration of 2002 China-US Science and Technology Cooperation Executive Secretariat Meeting. First, please allow me to extend my warm welcome to all the delegates of both sides. The convention of this ESM is in accordance with the resolution of the Joint Commission Meeting held in Beijing last April. Last ESM was held in Hawaii at the beginning of 2000. The ESM is a working level meeting under the Science and Technology Cooperation Agreement between the Chinese Government and the US Government, with its main mission to review the cooperative activities occurring under the protocols of the Agreement, discuss and address specific problems existed in the cooperation. In the past, ESMs held by both sides played an active role in solving specific problems and promoting progress of the cooperation. I believe, through joint efforts by delegates of both sides, this ESM will do no less in fostering China-US science and technology cooperation than it did in the past.

Now, according to the meeting agenda, I proceed to the introduction of the Chinese delegation. Please raise your hand when introduced, my dear Chinese colleagues.

Shen Xiaonong      Director-General, Department of International Cooperation, China Meteorological Administration

Wang Weizhong      Director-General, China Agenda 21 Administration Center, Ministry of Science and Technology

Kong Xiaokang      Deputy Director-General, Department of International Cooperation, State General Administration of Quality Supervision, Inspection and Quarantine

Li Ming      Deputy Director-General, Department of Engineering and Materials Sciences, National Natural Science Foundation of China

Wei Zhiqi      Director, Division of America and Oceania, Department of International Cooperation, Ministry of Science and Technology

Li Yongwei      Director, Division of Science Education, Department of Policy, Regulations and Reform, Ministry of Science and Technology

Geng Jiandong        Director, Administrative Office, High-Tech Research and Development Center, Ministry of Science and Technology

Chen Shuoyi    Director, Hi-tech Division IV, High-Tech Research and Development Center, Ministry of Science and Technology

Lv Xuedu    Director, Division of Resources and Environment, Department of Rural and Social Development, Ministry of Science and Technology

Huang Jing        Director, Strategic Division, China Agenda 21 Administration Center, Ministry of Science and Technology

Zheng Fangneng        Director, Division of Energy and Transportation, Department of High and New Technology Development and Industrialization, Ministry of Science and Technology

Yu Xingjun        Director, International Division, Department of International Cooperation, Science and Technology, Ministry of Water Resources

Cao Jinghua        Director, Division of America and Oceania, Bureau of International Cooperation, Chinese Academy of Sciences

Chen Huai        Director, Division of America, Oceania and Eastern Europe, Bureau of International Cooperation, National Natural Science Foundation of China

Wang Qinghua        Director, Division of International Cooperation, Department of Foreign Affairs, State Administration of Work Safety

Zhao Ming        Director, Division of Bilateral Cooperation, Department of International Cooperation, China Seismological Bureau

Huang Xiaoguang        Director, Division of Bilateral Cooperation, Department of International Cooperation, State Forestry Administration

Bian Gang    Director, Department of International Cooperation, China Nonferrous Metals Industry Association

Wang Baodong        Deputy Director, Division of America, Department of America and Oceania, Ministry of Foreign Affairs

Wei Qinfang        Deputy Director, Division of Agriculture Science and Technology, Department of Rural and Social Development, Ministry of Science and Technology

Chen Zhixin        Deputy Director, Division of America and Oceania, Department of International Cooperation, Ministry of Agriculture

Song Guangxia Deputy Director, Division S&T Achievements and Exchanges,  
Department of Sciences, Technology and Education, Ministry of Health

Qiu Weili Deputy Director, Division of America and Oceania, Bureau of Foreign  
Affairs, Chinese Academy of Social Sciences

Ma Yongzheng Deputy Director, Division of International Cooperation, Department of  
International Cooperation, Ministry of Land and Resources

Duan Liping Deputy Director, Division of International Cooperation, Institute of  
Scientific and Technical Information of China, Ministry of Science and Technology

Luan Huixin Engineer, Administrative Office, Department of Science and  
Technology, Ministry of Information Industry

Du Li Program Officer, Division of Key Projects, Department of Science,  
Technology and Education, Ministry of Communications

Chen Xiong Program Officer of the Department of Basic Research, Ministry of  
Science and Technology

Wei Yan Program Officer, Division of Bilateral Affairs, Department of  
International Cooperation, State Oceanic Administration

Wang Yanqing Program Officer, Department of International Cooperation, State  
Environmental Protection Administration

Jiang Xiaohong Program Officer, Foreign Affairs Office, Department of International  
Cooperation, State Bureau of Surveying and Mapping

The above are the whole Chinese delegation.

Ladies and gentlemen, science has no national boundaries. International science and technology cooperation and exchange is a noble cause in international relations. It serves as a bridge of friendship and cooperation linking different countries, creating a favorable environment for international peace and development, and leading peoples of different nations to the path towards common development, common progress and common prosperity.

Since January 1979, when Mr. Deng Xiaoping and President Carter signed the Science and Technology Cooperation Agreement between the Chinese Government and the US Government, China-US governmental science and technology cooperation has been characterized by a stable development, large cooperation scale, diversity in cooperation channels and means, broad cooperation areas and mutual benefit. It has made contributions to the scientific, technological, economic and social development and the improvement of the living standards of the people in both countries, promoted the exchanges between the two peoples, helped push forward the improvement and

development of China-US relations, and thus become an important part of the bilateral relations. Obviously, the above achievements are resulted from the joint efforts by all those who are concerned about, supportive of and committed to the bilateral science and technology cooperation at both sides. However, upon entering the new century, science and technology is developing towards an unprecedented breadth and depth at a surprising pace. Meanwhile, the economic globalization has brought new opportunities and challenges to nations of the world. The new situation has called for new actions in China-US science and technology cooperation.

It was just under that background that, last April, the 10<sup>th</sup> China-US Joint Commission Meeting on Science and Technology Cooperation was successfully held in Beijing. In a spirit of advancing with the times, and cooperating with candor and sincerity, leaders of science and technology communities of both countries conducted in-depth discussions on major issues pertaining to China-US science and technology cooperation, reached extensive consensus, and outlined guiding principles. They agreed to have ESM convened before the end of this year to translate the principles and framework suggested at the JCM into concrete cooperation, leading the China-US science and technology cooperation into a more practical direction. So, much is being expected from this ESM, which is a continuation of the JCM. If we define the JCM as a meeting to set principles and directions on a macro-level, then this ESM is a one to detail the above principles and directions on a micro-level, addressing specific issues and advancing the progress in cooperation. The significance of this meeting is great, and the task burdened on the shoulders of the delegates weighs heavy.

I hope during the meeting, especially the part of free discussion of the meeting, delegates of both sides, in the above spirits, will actively participate in the discussion, locate problems, explore solutions, make suggestions and contribute our wisdom in an effort to make this ESM a friendly, candid, sincere, practical and highly efficient meeting. I believe delegates of both sides will surely not disgrace your duties here. Your wisdom and efforts will surely make this meeting a great success.

As one Chinese saying goes, Guilin is the most beautiful place in the world. I wish all the delegates a pleasant stay in this beautiful city of Guilin. And I also wish this meeting, through joint efforts by delegates of both sides, will be fruitful and successful. I hope every delegate will have much to take back with at the end of the meeting. In the future, our memory about Guilin will be not only beautiful, but also meaningful.

In his speech at the Bush Library in the United States last month, President Jiang Zemin pointed out that, China is the world's largest developing country, while the US is the world's largest developed country. The Chinese and the US economies are highly complementary and the cultures of the two countries have distinctive features. There exists a vast potential for cooperation in areas of trade, energy, environment, science, technology and education.

Confucius, a widely respected wise man in ancient China, once said: the past is gone, only the future remains what you can strive to make a difference. So, let us continue our

joint efforts, enhance the mutual understanding, and promote cooperation to jointly create a more beautiful future for China-US science and technology cooperation.

Thank you!

**Opening Remarks and Introductions**  
**U.S.-China Executive Secretaries' Meeting**  
November 12,13,14, 2002

Kay Anske, U.S. Executive Secretary  
Director, Office of Science and Technology Cooperation  
U.S. Department of State

Thank you, Director Jin Ju, for your warm welcome and thank you to the Ministry of Science and Technology for arranging this important meeting in such a beautiful location. I want to particularly acknowledge all of our Chinese counterparts who have taken the time to attend this multidisciplinary event. This is my first time in China and I feel very privileged to be here. My colleagues and I look forward to a productive and informative meeting, and we also look forward to seeing lovely Guilin during our time here with you.

Not only is this my first time in China, it is also my first time serving as the U.S. Executive Secretary to the U.S.-China Joint Science and Technology Committee. As you know, Director Jin, I became director of the State Department's Office of Science and Technology Cooperation this past July. You and I had the chance to meet over lunch soon after that and have been working together towards this meeting ever since. It is great to finally be here and to get this meeting started.

In preparing for this meeting, I have been impressed by the sheer size of the cooperation that has developed since the signing of the original Science and Technology Agreement between our two countries in 1979. Much has happened during these more than 20 years. Despite the ups and downs in other areas of our complex bilateral relationship, the science and technology collaboration between the United States and China has grown, multiplied and matured.

During this meeting, we will discuss some of the more than 40 protocols that have been signed and appended to the original agreement. Many of these are as active now as they were on the day that they were signed; others perhaps need to be considered for retirement, after serving their purpose for so long and so well. This is a natural process as our two nations move forward and confront an ever-changing landscape of new technologies and challenges. For example, since the last Joint Commission Meeting, both of our countries have participated in the World Summit on Sustainable Development. This important approach to improving the lives of people worldwide must inform and guide our science and technology activities now more than ever.

As President Bush has made clear, the United States believes that sustainable development begins at home and is supported by effective domestic policies as well as international partnerships. We strongly support the call in the Johannesburg Plan of Implementation for building greater capacity in science and technology for sustainable development. Our collaborative efforts in science and technology advance our shared aspiration for sustainable development. The United States welcomes this opportunity to work with our Chinese counterparts.

The Joint Commission Meeting last April provided us guidance on where our science and technology cooperation should be going. I am grateful that we are now able to follow-up, and put into effect, some of the JCM's recommendations. I think this process of alternating high level Joint Commission Meeting and working level Executive Secretaries' Meeting is a good model for the future, and will help to keep our science and technology cooperation as dynamic as possible. I look forward to our discussions later in the program on the future of the ESM.

In conclusion, I am very pleased to be here and look forward to reviewing the various protocols as well as those areas of future cooperation that have been identified for the group sessions. I am confident that we can chart a way forward that will continue to build upon the success that we have experienced up to this point.

I would now like to introduce the US delegation:

Richard Affleck  
International Research Administrator  
Foreign Agricultural Service  
U.S. Department of Agriculture

Christo Artusio  
Foreign Affairs Officer  
Office of Global Change  
U.S. Department of State

William Blanpied (BLAN-pee)  
Senior International Analyst  
National Science Foundation

Scott Christiansen  
International Program Leader  
Agricultural Research Service  
U.S. Department of Agriculture

Lee Gebert  
China Desk Officer  
Office of S&T Cooperation  
U.S. Department of Energy

John Gray  
Sediment Specialist/Hydrologist  
Office of Surface Water  
U.S. Geological Survey

Sylvana Li  
International Affairs Specialist  
Agricultural Research Service  
U.S. Department of Agriculture

Magdalena Navarro  
International Affairs Officer  
National Institute of Standards  
and Technology  
U.S. Department of Commerce

Kurt Tong  
Science Counselor  
U.S. Embassy in Beijing

Francis Tuan (twon)  
Senior Economist and Leader of the China Project  
Economic Research Service  
U.S. Department of Agriculture

Julian Wang  
Senior Research Meteorologist  
Air Resources Lab  
National Oceanic and Atmospheric  
Administration  
U.S. Department of Commerce

Jock Whittlesey  
Science Officer  
U.S. Embassy in Beijing

Jentai Yang  
Senior Program Manager  
Environmental Protection Agency

## **Review of and Comments on Recent China-US Science and Technology Cooperation**

Jin Ju, Deputy Director General  
Department of International Cooperation, Ministry of Science and Technology

November 12, 2002, Guilin, China

Distinguished Ms. Kay Anske,  
Distinguished delegates:

Good morning!

In my capacity as the Chinese Executive Secretary for China-US Science and Technology Cooperation, I am honored to represent all the Chinese organizations concerned to briefly review and comment the recent development in China-US science and technology cooperation.

China-US science and technology cooperation, which has been consistently built on the basis of equality and mutual benefit, results sharing, protection of intellectual property rights and respect for international norms, is an important part of the broader, more expansive China-US relationship. It has contributed to scientific, technological, economic and social development and improvement of the living standards of the people in both countries, promoted the exchanges of the two peoples, enhanced the trust and friendship between them, and helped push forward the improvement and development of China-US relations. Since the last ESM held in Hawaii in January 2000, numerous governmental agencies, universities, research institutes and other organizations in both countries have, as always, engaged themselves to this kind of reciprocal cooperation in various areas, and produced a number of cooperative achievements of relatively advanced levels. For example, progress in cooperative projects such as Doppler radar, Beijing Electronic Positron Collider and Array for Real Time Geostrophic Oceanography. Generally speaking, during this period, the China-US science and technology cooperation develops steadily and satisfactorily.

In this period, through the exchange of diplomatic notes, the two sides extended the Science and Technology Cooperation Agreement between the two governments, and 6 protocols coterminous with the Agreement, including environmental protection, surveying and mapping, high energy physics, nuclear physics and controlled magnetic fusion, earth science and transportation. The two sides also extended protocols such as nature conservation and energy efficiency and renewable energy at other separate occasions. The extension of the Governmental Science and Technology Cooperation Agreement and related protocols provide legal base and framework for further cooperation in the future. The significance is great.

In the meantime, the two sides convened working group meetings of several protocols, discussed cooperative activities occurring under the related protocols, identified and

implemented a number of cooperative projects, and promoted the progress of cooperation in related areas.

In order to implement the consensus reached by the presidents of the two countries at their Shanghai summit meeting, and to further promote the development of China-US science and technology cooperative ties, the 10<sup>th</sup> China-US Joint Commission Meeting on Science and Technology Cooperation was convened in Beijing last April. Minister Xu Guanhua, Ministry of Science and Technology and Dr. John Marburger, Science Advisor to the President and Director of Office of Science and Technology Policy co-chaired that event. Around 50 representatives from Ministry of Science and Technology, Ministry of Foreign Affairs, Ministry of Agriculture, Ministry of Water Resources, Ministry of Health, Chinese Academy of Sciences, National Natural Science Foundation, State Environmental Protection Administration, State Forestry Administration, China Meteorological Administration, China Seismological Administration, State Oceanic Administration, Chinese Embassy in the US at the Chinese side and Office of Science and Technology Policy, Department of State, Department of Agriculture, Department of Energy, National Oceanic and Atmospheric Administration, National Institute of Health, the US Embassy in China at the US side attended the meeting.

The atmosphere at the JCM was very active, due to the new form of free discussion, what you call brain storm adopted, and representatives from both sides freely and thoroughly expressed themselves. In the meeting duration of one day and a half, the two sides affirmed the achievements of science and technology cooperation in the past 20 years and more, and focused their discussions on the following topics: energy and physical sciences, ecosystem and environmental sciences, life and health sciences, agricultural and food sciences, science education and public outreach, and cooperation mechanism and methods. Their in-depth and thorough discussions led to a series of consensuses, which clearly set the direction for future China-US science and technology cooperation. Minister Xu Guanhua and Dr. Marburger signed the meeting minutes before the JCM ended, in which agricultural science and technology, clean energy, genomics, nanotechnology, global change, science education and information technology were identified as 7 priority areas for future cooperation.

After the meeting, President Jiang Zemin met the US delegation, expressing the attention and importance he personally attached to China-US science and technology cooperation, which greatly encouraged both sides' enthusiasm for the cooperation.

In a word, the JCM, highly efficient and pragmatic, enhanced the mutual understanding and friendship between the science and technology communities of the two countries, promoted the development of China-US science and technology cooperation, implemented the consensus reached by the two presidents at their summit meeting last February to strengthen cooperation and exchange in areas like trade, energy, science and technology and AIDS prevention and to have the Joint Commission Meetings on Science and Technology, Economy and Trade convened by the end of this year. The meeting achieved its expected goals, and marked a new beginning for China-US science and technology cooperation. Both sides expressed their satisfaction to the meeting, hoping

this JCM could usher China-US science and technology cooperation into a more practical decade.

After the JCM, in accordance with the spirits highlighted at the meeting, agencies concerned at the Chinese side conducted related work, substantially pushing forward the progress of China-US science and technology cooperation.

According to the suggestion of the JCM to establish a contact person mechanism in the 7 priority areas for cooperation, Ministry of Science and Technology actively coordinated related agencies, and soon decided the candidates for contact persons and their secretaries for all the areas, and informed the US side about this progress. Office of Science and Technology Policy also held an interagency meeting to determine candidates for that mechanism. The contact persons for cooperation in priority areas at both sides were formally determined when Dr. Marburger handed the US contact list to Vice Minister Liu Yanhua, Ministry of Science and Technology during Mr. Liu's visit to the US last August. Not long ago, Vice Minister Liu Yanhua called Chinese contact persons and their secretaries together for a special meeting, in which participants discussed how to take advantage of this contact mechanism to better cooperate with the US side, and expressed their readiness to strengthen communications with their US counterparts. The establishment and operation of this mechanism will help strengthen communication and coordination between the two sides in the priority areas, facilitate discussion, address specific problems, identify and implement cooperative projects, and promote cooperation in all the areas concerned. We hope, in the future, both sides will fully take advantage of this mechanism to strengthen communication and coordination and to promote development in the cooperation.

At the JCM, both sides called for strengthening exchange and cooperation between scientists of next generation of the two countries, and proposed an initiative called Summer Institute. After the JCM, Ministry of Science and Technology, Chinese Academy of Sciences and National Natural Science Foundation of China at the Chinese side and National Science Foundation at the US side conducted further communication and discussion on that initiative, and agreed that the US National Science Foundation would select and send 20 outstanding US graduate students in the summer vacation of 2003 to various labs of research institutes or universities in China, where they would be expected to conduct joint research with their Chinese colleagues. The two sides also agreed the scale of this project could increase based on the assessment of previous implementation of the project. This project can help improve the US young scientists' understanding of Chinese history, culture and current scientific, technological and economic development, conducive to the establishment of long-term cooperative ties, and significant to the long-term development of China-US science and technology cooperation and even the broader bilateral relations. The Chinese side attaches great importance to this project. We have formed a supervising group for it, and are actively undertaking related preparation work for receiving the first 20 US students next year.

The JCM identified genomics as one of the 7 priority areas for future cooperation. Last June, as a JCM follow-up activity, Vice President Chen Zhu of Chinese Academy of Sciences, Chinese contact person for genomics area, visited US Department of

Agriculture, National Institute of Health, National Science Foundation and Domestic Animal Genomics Interagency Working Group, and reached preliminary intent on cooperation in swine genome sequencing with them. The genomic structure of swine is similar to that of human beings. Research on swine genome sequencing is of significance to the future development in the medical science concerning human organ transplantation, and can bring welfare to the people of the two countries and of the world. In mid August, during his visit to the US, Vice Minister Liu Yanhua further discussed issues relating to that cooperative initiative with Office of Science and Technology and other relevant science and technology related agencies. Currently, agencies concerned at both sides are still coordinating on the project. We hope, through joint efforts, we can finally bring about concrete cooperation on the above mentioned initiative.

Progress is also being made in agricultural science and technology, another priority area identified at the JCM. In order to further promote related cooperation, Ministry of Science and Technology and United States Department of Agriculture have both showed strong interest in signing a Protocol on China-US Agricultural Science and Technology Cooperation. If this protocol can be successfully signed, it would surely bring substantial progress in cooperation in agricultural science and technology, especially in agricultural biotechnology, agricultural environment, dairy production, food safety, agricultural products processing, and water-saving agricultural technology, areas of both parties' interest.

In addition, agencies concerned at both sides are actively planning and preparing to establish the US-China Science and Technology Innovation Park at the University of Maryland. After more than one year discussion, the Torch High Technology Industry Development Center of the Ministry of Science and Technology, the Administrative Committee of Zhongguancun Science Park and the University of Maryland signed the cooperation agreement for that science park in August this year. The three parties agreed to cooperate to establish the US-China Science and Technology Innovation Park at the University of Maryland. The Chinese side would provide necessary financial and personnel support for the start-up of the project in order to attract small and medium enterprises in areas of environmental science and technology, agricultural sciences and life sciences to move into the science park at its initial phase. The US side would provide necessary resources and services of the University to the enterprises within the science park.

Ministry of Science and Technology sought consultations from and had discussions with Department of Commerce on the establishment of the science park. Vice Minister Liu Yanhua and Under Secretary Bond of Department of Commerce signed a meeting record, in which they congratulated the concerned parties on the establishment of the science park, and agreed to continue to exchange information and updates on the park's progress and to encourage use of the science park as a vehicle for promoting China-US technology cooperation. Office of Science and Technology Policy and Science Advisor to the Secretary of State also indicated they would pay attention to the progress of the science park.

At present, Ministry of Science and Technology has sent a 3-person working group to the University of Maryland to discuss the implementation details of the project. The two sides have reached consensus on the implementation agreement, which substantially pushed forward the related cooperation.

We hope this science park, as a new phenomenon in China-US science and technology cooperation, will receive recognition and support from all the US agencies concerned. We also hope this project will serve as an experiment and example in exploring new means, new channels and new areas for China-US science and technology cooperation.

At the JCM, both sides raised the issue of strengthening mutual visits between science and technology leaders of the two countries. Based on this understanding, in this August, Mr. Liu Yanhua, Vice Minister of MOST paid a visit to the US. During his stay there, Mr. Liu met with the following American officials in science and technology field: Mr. John Marburger, Assistant to the President for Science and Technology and Director of Office of Science and Technology Policy, Mr. Philip Bond, Under Secretary of Commerce, Ms. Rita Colwell, Director of National Science Foundation, Mr. Norman Neureiter, Science Advisor to Secretary of State, with whom, Mr. Liu exchanged in-depth views over extensive issues relating to the science and technology cooperation.

In the meeting with Dr. Marburger, the name list of contact persons for seven priority areas for future science and technology cooperation was agreed upon. The two sides reached consensus that those contacts should start to communicate as soon as possible to push forward relevant cooperation. Both sides also agreed that the ESM should be convened in the near future to identify cooperative projects and address specific problems. Dr. Marburger attached importance to the pending ESM, expressing his hope that this ESM would be a pragmatic one which could solve problems and promote cooperation. The Chinese side responded enthusiastically to this, and expressed its concern over the visa issue. The US side promised to pay close attention to the visa issue and indicated that work would be done to improve the status quo.

In the meeting with Mr. Bond, both sides expressed satisfaction to the preparation work for the US-China Science and Technology Innovation Park at the University of Maryland, and promised to continue to pay attention to this project in its following phase. They also agreed to cooperate in the area of technical standards. The forms of such cooperation could include personnel and policy exchange and training. Besides, the US side indicated interests to initiate cooperation in air pollution treatment for 2008 Beijing Olympics Games, and emphasized their satisfaction towards the cooperation under the China-US Civilian Industrial Technology Cooperation Protocol, and expressed their hope to renew the protocol this year, to which the Chinese side responded actively.

After the meeting, Mr. Liu and Mr. Bond attended the signing ceremony of the US-China Science and Technology Innovation Park at the University of Maryland, and signed a meeting record, in which the two gentlemen indicated their support to this project.

In the meeting with Dr. Colwell, the Chinese side briefed the US side about the progress on the organization and preparation for the project of Summer Institute, to which the US

side expressed satisfaction. Both sides emphasized that this project was of great importance to enhance understanding and cooperation between youth scientists of the two countries, and that its significance to the long-term bilateral relationship was far-reaching. In addition, the US side also agreed to start cooperation with China on research project management, and to receive Chinese personnel to work in NSF to learn the relevant experience and practice in the US side. At present, Ministry of Science and Technology has selected candidates for the above exchange, who will be dispatched to NSF for three months at the beginning of next year.

Through this visit, organizations concerned at both sides enhanced mutual understanding and trust, consolidated the achievements of the JCM, and advanced the progress of cooperation in related areas.

Although generally speaking the cooperation is steadily moving forward, there still exist some problems, which, to some extent, have negatively affected the cooperation. The most serious one is the visa issue for Chinese delegations engaged in science and technology exchanges to the US. We have noticed the changes in the US visa issuing procedure after the 9.11 event. According to the statistics of MOST, quite a few delegations to the US, including some vice minister level ones, have been declined visas, or the issuing of visas was delayed to a time after their planned activities in the US. Due to the visa issue, some important visits had to be cancelled. This has hurt the confidence and enthusiasm for cooperation at the Chinese side, thus brought negative influence to the bilateral cooperation and exchange. We also noticed that some American universities and research institutes also expressed their concern over the above issue. We maintain that China-US science and technology cooperation is a win-win type. The above situation has harmed not only China's interest, but also the interest of the US. We express our deep regret and grave concern over this situation, which blocks cooperation and hurts interests of both sides.

We understand the difficulties the US faces at this extremely special moment. China and the US are both victims of terrorism. In the war against terrorism, the Chinese people have always stood with the American people. The two peoples have had effective cooperation in this regard. We hope the US organizations concerned could work to minimize the negative impact your temporary difficulties may bring to the cooperation to maintain its development momentum.

Another issue is the implementation of China-US Transportation Cooperation Protocol. After the signing of this protocol in 1983, the two sides conducted some cooperative activities, and made some achievements. However, later, due to some reasons, especially the lack of funding at the US side, the two sides failed to undertake any concrete projects. We would like to take the opportunity of this ESM to convey a message to the US side that the Chinese side sincerely wishes to work together with you to overcome difficulties, promote cooperation under this protocol and make transportation another active area in the bilateral cooperation.

To those problems, especially the visa one, we hold that both sides should first bear in mind that our cooperation is reciprocal, and its goal is noble, that is to promote the

scientific, technological, economic, and social development as well as the improvement of the people's living standards in both nations, and to enhance the exchange and friendship between the two peoples. Hence, we should demonstrate maximum flexibility and bestow maximum understanding and trust to each other in jointly working out a solution. I believe, through further communication and joint efforts, the above problems will be resolved properly.

China-US science and technology cooperation is generally satisfactory. However, this cooperation is disproportionate to the economic and scientific development level in terms of both scale and depth. There is still huge space for expansion. Especially when comparing the progress of this bilateral cooperation with that of economic and trade cooperation, I strongly feel so. In addition, science and technology cooperation is often the precursor of economic and trade cooperation, so science and technology cooperation, which lags behind economic and trade cooperation is sure to hinder the latter's development from a long-term perspective. In order to push forward the China-US science and technology cooperation, I propose as the following:

-- To establish an email communication mechanism for major cooperative activities among Chinese organizations. Agencies concerned at the Chinese side discussed and coordinated on this issue at the preparatory meeting for this ESM. I would like to take this opportunity to brief the US side about this design. There were interagency exchange and communication on China-US science and technology cooperation at the Chinese side, which to some extent did promote the cooperation. However, due to the lack of a fixed mechanism, and thus the random nature of this kind of exchange and communication, some important information was not fully shared, which did affect the strengthening of the cooperation. The need to strengthen exchange and communication at the Chinese side was urgent. So, we proposed to establish an email communication mechanism for major cooperative activities among different Chinese organizations. In the future, in communications with their US counterparts on major cooperative events, such as important mutual-visits, proposals or blueprints of major cooperative projects and major cooperative progress, Chinese agencies concerned may copy related mails to other related agencies. In this way, each relevant agency can be informed about the cooperative activities which are being taken or about to be taken, so that they can explore the possibility to participate in the cooperation. For instance, when Ministry of Agriculture is contacting Department of Agriculture on a project of water and soil conservation in Western China, pertinent information can be copied to relevant personnel in Ministry of Science and Technology, Ministry of Water Resources, State Environmental Protection Administration, which may be also interested in that project. It will not increase the work volume a lot to copy mails to a few more agencies, but it can help these agencies obtain a large amount of valuable information about cooperation, from which they can find potential opportunity for participation. We believe that through cooperation among different Chinese agencies in a way that integrates each other's resources and complements each other's advantages, China-US governmental science and technology cooperation will see significant progress in terms of both scale and influence. And the demonstration effect of this kind of governmental cooperation will boost China-US science and technology cooperation at various levels.

-- To conduct cooperation in the area of basic research data sharing. In the modern world, science and technology development is characterized by continuous emergence of new and cross disciplines, accelerated technological renovation, shortened industrialization process of scientific and technological achievements, and rapid creation of high and new technology products and industries. Under these circumstances, each country is neither possible nor necessary to accomplish all the tasks in scientific research independently. By sharing basic research data of general characters, we can avoid unnecessary work that would otherwise repeat, and thus optimize the use of limited scientific research resources. This kind of cooperation is necessary and beneficial to all participants. Currently, the Department of Basic Research, Ministry of Science and Technology is coordinating the work in this regard. Any organizations interested in this initiative at the US side may have further detailed discussion with the Department of Basic Research, Ministry of Science and Technology.

The above are my suggestions to improve and facilitate future China-US science and technology cooperation. Of course there must be more and better ways and means to improve the cooperation. I hope all the delegates can air your views freely and thoroughly, and make better suggestions to the China-US science and technology cooperation. To widely hear different opinions from various aspects is just one of the most important goals of this gathering. That's all, thank you!

***Report on Agriculture Science and Technology Break Out Session  
ESM – Guilin, November 12-14, 2002***

**Joint Centers for Natural Resource Management**

The U.S. side presented an overview of the Joint Centers for Natural Resource Management. Chinese participants asked questions concerning the initiation of the joint centers and the degree to which they had already been formalized.

*The Center for Soil and Water Conservation and Environmental Protection* on the campus of North West Sci-Tech University for Agriculture and Forestry (NWSUAF) at the Chinese Academy of Sciences (CAS) Institute for Soil and Water Conservation in Yangling is a natural expansion of more than fifteen years of collaboration between the U.S. and China, which took place outside the formal bilateral S&T framework. The U.S. Center is located at the University of Arizona in Tucson in the Institute for the Study of Planet Earth with additional USDA-ARS and land grant university teams in other states contributing to the work. Both sides now seek to elevate their relationship and to seek support from the governments of both countries. The Ministry of Water Resources felt that better communication among potential partners was required. The purpose of the overview was to fully discuss the idea and to make sure that interested parties would have an opportunity to enter into the cooperation.

The U.S. opinion was that the Joint Centers for Soil and Water Conservation and Environmental Protection could eventually be adopted under the USDA/MOST Protocol as an Annex. On the Chinese side, MOST would coordinate the diverse mix of ministries and administrations that are encouraged to use the centers as a platform for organization of their work.

*Joint Centers for Grazingland Ecosystem Restoration*: The recommendation was for the USDA and cooperators in Gansu to move ahead with their cooperation in association with the World Bank/GEF (Gansu – Xinjiang Pastoral Development Project) and, after the effort is established in 2003, consider government involvement in discussing expansion of the program to a regional, multi-provincial basis. More time is needed to communicate among the Chinese partners to consider the possible involvement of the central government. MOST will inform the U.S. Point of Contact (Scott Christiansen, USDA-ARS) concerning any additional information from the Chinese side.

The Chairman commended the sides for their frank inputs to the joint center discussion, which offered opportunities to improve the cooperation framework. Both sides have responsibility for broad consultation concerning natural resource management subjects that involve multiple agencies. He also recommends that the USDA and Chinese consider a consolidation of their efforts where possible when the same topics for cooperation are being planned (e.g. Yellow River monitoring; soil and water conservation; joint centers).

**The Existing Cooperation and its Proposed Expansion**

Chinese delegates from the MOA reviewed the previous cooperation in Agricultural Science and Technology and in particular, the consensus reached between

leaders of MOA and USDA for further strengthening the cooperation in July 2002. Secretary Veneman's visit to China in July attests to the importance of the work agenda. In response to the query by MOA delegates, the U.S. delegates replied that the anticipated expansion and elevation of the agricultural cooperation was still being discussed by top levels of USDA.

USDA delegates also responded to the request for feedback by saying that the Scientific Cooperation Research Program and the short-term exchange program were operating normally and were being used to address as many topics of interest as allowed within the available budget, such as food safety, agro-processing, dairy, and information exchange.

### **New Agreements**

The USDA and State Department have finalized their inputs to a new Protocol between the USDA and MOST, as well as a Memorandum of Understanding between the USDA and the MWR. These two agreements are ready for signature.

Areas of future cooperation for the USDA/MOST protocol include: dairy product processing and fetus research; food safety; water saving agriculture; agricultural ecosystem protection and management; processing of agricultural products; and agricultural biotechnology. USDA/MOST cooperation in the future can be carried out through reciprocal exchanges of researchers working at various labs, academic seminars or workshops, and research projects beneficial to both countries. Representatives from both sides should meet as soon as possible, after the protocol is signed, to explore in detail what specific projects could be initiated. Each side would seek funding to support the proposed cooperation based on agreed topics.

The MOA asked for distinctions between Agricultural Science and Technology that takes place between USDA and MOA versus the anticipated Agricultural Science and Technology that would be established under the new protocol. Biotechnology and genomics (discussed in another break out session) are areas where additional agencies were expected to contribute to the cooperation. Therefore, MOST was regarded by the U.S. side as an appropriate coordinator. Mechanisms need to be evolved to allow a match between the USDA and its logical counterparts on the Chinese side. MOST suggested that it was essential to discuss methods by which the cooperation could include all interested parties based upon comparative advantage.

***Report on Clean Energy Breakout Session  
ESM – Guilin, November 12-14, 2002***

The meeting was chaired by Zheng Fangneng of MOST, Lee Gebert of U.S. Department of Energy (DOE) and Jentai Yang of U.S.-EPA.

Clean energy cooperation between the U.S. and China was generally evaluated as being positive and significant, and headed in the right direction. The Chinese delegation sought a practical emphasis on areas most relevant to China's development needs.

DOE reviewed its numerous clean energy programs in China under the Fossil Energy Protocol and its five Annexes, and the Energy Efficiency and Renewable Energy Protocol and its seven Annexes.

The Chinese side expressed interest in large-scale, grid-connected renewable energy projects, aimed at demonstrating the degree to which economies of scale and localization of production can reduce the delivery cost for renewable energy sources. The U.S. side explained some of the constraints involved, including the difficulty of arranging concessional financing from the United States, and the fact that much renewable energy technology in the U.S. is held by small, private firms who have not yet been able to reduce production costs on the U.S. side through economies of scale.

The U.S. side proposed holding a public/private forum or forums, focused on presentation of technologies and discussion of policies in two areas: renewable energy technology and clean coal technology. A Clean Energy Forum was held in 2000, but the U.S. side expressed frustration that China's energy policymakers did not participate, and the lessons of the Forum therefore apparently did not penetrate to energy policy decision-makers. More generally, there seems to be a lack of interest in renewable energy and clean coal cooperation among China's energy policy people. Critical are questions of pricing and taxation, as well as financing.

DOE presented the U.S. plan for Green Olympics cooperation with China, which is receiving good support from MOST. A final decision of whether a new Green Olympics cooperation protocol is needed is still pending. DOE has already signed a Letter of Intent with the Beijing Municipal Government.

EPA briefed on its numerous cooperative programs in China in recent years on energy efficiency, clean energy generation and air pollution issues. Currently, four new international initiatives are under review internally within EPA, on clean air and air quality; clean transport and clean vehicles; clean energy technology; and indoor air pollution. The clean energy technology segment may encompass energy efficient buildings and energy efficiency standards; coal mine methane recovery; industrial pollution prevention and energy efficiency; and Green Olympics cooperation.

Chinese delegates expressed interest in EPA's activities, and sought more information. The question of whether EPA and SEPA need an S&T Agreement Protocol was raised, with some voicing the view that this could help spread the benefits of EPA cooperation beyond SEPA.

MOST proposed a workshop assessing or evaluating the potential market for U.S. clean coal technologies in China, including IGCC technologies.

***Report on Genomics Breakout Session***  
***ESM – Guilin, November 12-14, 2002***

The breakout session on genomics was co-chaired by Cao Jinghua from the Chinese Academy of Sciences (CAS) and Francis Tuan from the U.S. Department of Agriculture (USDA). Dr. Cao began with an overview of China's many contributions to genomics and life sciences, including its work on sequencing the human genome and the rice genome. He noted, though, that China has several structural weaknesses that limit its ability to contribute to genomics research.

Much of the discussion centered on a planned joint project on the swine genome. An agreement between CAS and USDA on this project is in the final stages of preparation, but uncertainty remains on both sides about funding and support. Dr. Cao raised the issue of U.S. provision of reagents as part of the project, saying that this was a critical part of the deal but that specifics have never been given in writing. The project will begin on a trial basis and can be formalized as it develops. Dr. Tuan from USDA noted the strong support at the highest levels of USDA's leadership for this project, but cautioned that official funding and approval is still not final. He added that there is a need for much interagency consultation and coordination on this issue before final commitments can be made.

Mr. Blanpied from the U.S. National Science Foundation (NSF) said NSF was very interested in collaboration on plant genomics, and specifically on microbial genomics.

An area of concern was ownership of genetic property. Several speakers noted that this was a serious, sensitive, and important issue, and would have to be handled as an integral part of any collaborative efforts on genomics.

***Report on Global Change Breakout Session  
ESM – Guilin, November 12-14, 2002***

The Co-Chairs were Mr. Shen Xiaonong of the Chinese Meteorological Administration (CMA), and on the U.S. side Dr. Julian Wang from NOAA and Mr. Christo Artusio from the State Department

The Global Change session principally discussed proposals for future work. A list of proposed projects from both sides on a range of issues was prepared, but due to time constraints, discussion focused on climate change science, impacts and policy, and on dust storms.

MOST presented a list of proposals for future work related to climate change science, impacts, and policy. As many U.S. agencies had not seen the proposals in advance, the U.S. could only provide preliminary reactions. NOAA said that much of the work proposed under the climate change science category was currently being undertaken by NOAA, and mentioned that a U.S. workshop on domestic climate change issues in early December could be of interest to Chinese agencies. State Department said that although the proposed work in the policy category was interesting, the S&T group may not be the appropriate forum to address it, but that the U.S. would be happy to have these conversations at the appropriate time under the U.S.-China Working Group on Climate Change. Chinese contact points will be the staff level contacts previously indicated for the global change area. Julian Wang agreed to be the interim U.S. point of contact for the climate change science work and Christo Artusio agreed to be the interim U.S. contact for impacts and policy-related work. Both agreed to get a cleared U.S. response back to the Chinese points of contacts soon.

State Department explained the strong U.S. interest in expanding bilateral cooperation on dust storms, and provided a cursory overview of U.S. agency interest and involvement in the issue. EPA, DOE, NOAA, USGS, USDA, NASA and the State Department are all either involved in, or interested in engaging in, work related to the monitoring, prediction, alleviation, or study of the impacts of dust storms. In response, MOST and the Chinese State Forestry Administration indicated strong interest in collaboration. MOST requested concrete ideas on how to move forward, and SFA provided State with a proposal on research and remote sensing on desertification and an early warning and forecasting system. Chinese contact points will be the staff level contacts previously indicated for the global change area. U.S. interim contact points will be Julian Wang and Christo Artusio.

The U.S. will need to choose appropriate staff-level points of contact for both issues.

***Report on Information Technology Breakout Session  
ESM – Guilin, November 12-14, 2002***

The session was co-chaired by Geng Jiandong, Senior Engineer in the High-Technology R&D Center in the Ministry of Science and Technology (MOST) of China, and William A. Blanpied, Senior International Analyst, Office of International Science and Engineering in the U.S. National Science Foundation (NSF).

It was noted that information technology (IT) should actually be called information and communication technology (ICT), since communication is an integral part of information technology. Industry representatives or individuals familiar with the relevant industries should participate in planning for concrete US-China cooperation, including possible workshops, so that government efforts would not duplicate work already being undertaken by the private sector.

Mr. Jin Ju from MOST emphasized that China wants to avoid involvement in sensitive ICT-related issues. He stressed repeatedly China's interest in cooperating in "safe" projects that are clearly non-sensitive. China does not want to jeopardize the broader science and technology relationship with the United States, nor the broader bilateral relationship, by becoming involved in politically or technologically sensitive areas.

Magdalena Navarro from the U.S. National Institute for Standards and Technology (NIST) said that NIST is active in four areas that might be suitable for bilateral cooperation: 1) advanced network technologies for wireless communication, 2) biometrics, 3) language technologies such as speech recognition, and 4) cryptography for protection and authentication of data. Several visiting Chinese scientists are already working at NIST, some in one or more of these areas, and more would be welcome.

It was noted that network and Internet security are areas of common interest. They are neither politically nor technologically sensitive and clearly fall into the realm of governments, since their development are beyond the scope of any individual private company. Software development is another area for potential collaboration. As computer and communication hardware becomes increasingly complex, software developers are encountering severe problems in devising reliable systems. Cooperative efforts to resolve some of these fundamental difficulties could be highly productive.

Developing joint ICT projects will have to be done carefully, since there are many policy and technical issues to consider. Exploratory workshops involving experts from each side would be an appropriate step. A possible but non-exhaustive list of potential workshop topics that might result in concrete cooperative projects include: 1) advanced wireless network technology; 2) advanced software development, 3) advanced ICT specifically for international cooperation in "big" science projects; 4) development of the next generation Internet; 5) biometrics; 6) human language technology; 7) Internet data security; and 7) network system security.

In order to proceed, a joint working group might be established to develop concrete cooperative possibilities, including a tentative timetable. After due preparation had been made on each side, the US members would visit China (or vice versa) to work out a plan for cooperation, including a timetable for specific workshops, although there could well be exchange of individual scientists prior to and in conjunction with such workshops.

***Report on Nanotechnology Breakout Session  
ESM – Guilin, November 12-14, 2002***

The session was co-chaired by Li Ming, Vice Director of the Department of Engineering and Material Sciences of the National Natural Science Foundation of China (NSFC) and Mr. William Blanpied, Senior International Analyst, Office of International Science and Engineering in the U.S. National Science Foundation (NSF).

It was pointed out that nanotechnology research is a very exciting area in which the United States and several governments in the East Asia region, including China, are investing heavily. There are potential applications in many fields, including materials, manufacturing, information and communications technologies, biotechnology, and environmental protection. Experts believe that commercialization in the more far reaching of these areas is 10 to 15 years in the future, since a good deal of the basic research required for the development of viable devices and processes must still be performed. For this reason among others, there are clear advantages to U.S.-China cooperation in research underlying nanotechnology applications.

Participants in the breakout session agreed that the two sides should strive to develop plans for specific cooperative projects and programs ranging from cooperation between individual scientists to possible long-term cooperative programs between major research centers in the two countries. In order to develop plans for such concrete cooperation, it was agreed that one or more workshops should be organized, each of them consisting of no more than 10 experts from each countries. The U.S. and Chinese co-organizers of these workshops should have some experience about research in the other country and be committed to making use of the workshops to explore concrete collaboration. Topics for the workshops would be determined by scientists on each side. However, possible topics could be:

- Nano materials characterization;
- Nanoscale measurements and standards; and
- Nano materials applications in biology, information and the environment.

In order to proceed, NSFC and NSF should each designate an outstanding scientist in the nanotechnology research area to serve as Principal Investigator (PI) for the workshop series. These individuals would each designate two or three expert colleagues to serve with them as a joint preparatory committee. U.S. members of the preparatory committee would then meet with the Chinese members to develop a plan for one or more workshops. Ideally, the PIs should be selected by January 15, 2003, with the preparatory meeting held in late May or early June. The first workshop could then be held as early as November or December 2003.

It was pointed out that there is an interagency committee in the United States that has been formed to coordinate the U.S. Government's efforts in nanotechnology R&D under the National Nanotechnology Initiative (NNI). The U.S. side is likely to make some use of this committee in planning for the proposed workshops. Likewise, the Chinese side should endeavor to involve all interested government organizations in the workshop planning process.

***Report on Science Education Breakout Session***  
***ESM – Guilin, November 12-14, 2002***

The session was co-chaired by Li Yongwei, Chief of the Division of Science and Technology Communication in the Department of Policy, Regulation and Systems Reform in the Ministry of Science and Technology (MOST) of China, and William A. Blanpied, Senior International Analyst, Office of International Science and Engineering in the U.S. National Science Foundation (NSF).

It was pointed out that there are unique challenges to developing fruitful cooperation in the priority area of science education, unlike the case for areas such as nanotechnology or information and communications technology. Education has deep roots in national culture and national systems of education differ considerably between China and the United States. Nevertheless, it should be possible to identify topics for fruitful bilateral cooperation.

Some cooperation has already been initiated in the area of informal education (public understanding of science). A group of U.S. experts in science museum exhibitions and mass media presentations of science visited China in November 2000 and a group of Chinese experts made a reciprocal visit to the United States in 2001. Discussions initiated on these occasions have led to plans for concrete cooperation, including personnel and exhibition exchanges. The initiation of the Summer Institute Program for American graduate students in China in 2003 is another example of cooperation. As these examples illustrate, cooperation in science education could encompass several levels of education, including the general public and those who are committed to scientific careers. However, there was a consensus that the focus of any new programs should be on elementary and secondary school students and, importantly, on teachers who may not have had adequate subject matter training to allow them to convey the best instruction in science.

There was some discussion of the possibility of translating U.S. textbooks for use in China. However, this possibility presents two difficulties. First, U.S. textbooks are produced by the private sector which holds the copyrights on these texts. Second, translated textbooks could reach only a very small fraction of Chinese students. There was a general consensus that cooperative activities should look to the future and focus on possible uses of electronic delivery systems. Distance learning and the use of digital libraries for education provide areas for possible fruitful collaboration. They also raise a number of important issues including content, delivery methods, and policy issues such as free and open access to digital libraries and other electronic materials.

Several government organizations on the Chinese side have interests and involvement in science education, most notably MOST, the Ministry of Education, the National Science Foundation of China, and the Institute for Science and Technology Information of China; also, there is considerable interest and capability in the Chinese Academy of Sciences. Likewise, although the JCM designated NSF as the lead U.S. agency for cooperation in science education, several other agencies also have interests and capabilities that ought to be taken into consideration.

One or more workshops on distance learning and digital libraries in science education could be a reasonable way to initiate concrete cooperation. Because of the complexities involved, the two sides suggested that a joint working group should be

established to focus on distance learning and digital library cooperation: content and technologies, policies, and institutional organization. After due preparation had been made on each side, the U.S. members would visit China (or vice versa) to develop a concrete plan for cooperation including a timetable for workshops on specific topics, although there could well be exchange of individual experts prior to and in conjunction with such workshops.

The two sides also agreed about the desirability to maintain and strengthen the cooperation initiated in October 2000 in the area of informal education, or public understanding of science. Such cooperation could include:

- Visits by U.S. experts to assist in training programs for technicians and those who have been designated to manage public understanding of science programs;
- Exhibition exchanges, including exchange and introduction of new exhibits and perhaps joint production in China. A seminar or forum in China during 2003 could be a fruitful means for initiating such exchanges; and
- Student exchange programs during the summer or winter months of students in middle and high school grades focused on public understanding of science projects.

***Report on Water Resources Breakout Session  
ESM – Guilin, November 12-14, 2002***

Dr. John Gray from the U.S. Geological Survey, Mr. Dick Affleck from U.S. Department of Agriculture, and Mr. Wang Weizhong from China's Agenda 21 Center co-chaired the ESM breakout session on water resources. The co-chairs explicitly focused the meeting on specific suggestions for collaborative projects. This was done knowing that no commitments could be made on these proposals until the relevant agencies had an opportunity internally to review and discuss the proposals.

Speakers gave short descriptions of potential projects and identified the relevant agencies on each side which would undertake each project. Also, Jentai Yang of U.S.-EPA made a short presentation on projects that U.S.-EPA is undertaking on drinking water quality and on water quality in large water bodies.

Several different ministries and bureaus have a strong interest in water resources. On the U.S. side, these include U.S. Geological Survey, U.S. Department of Agriculture's Agricultural Research Service, Foreign Agricultural Service, and Economic Research Service, and the U.S. Environmental Protection Agency. On the Chinese side, the principal agencies included the Ministry of Water Resources (MWR), the Ministry of Science and Technology, the Ministry of Land and Resources, and the State Forestry Administration.

Several potential projects were put forward for future discussion. Since there are several relevant protocols, it was not always easy to distinguish which protocol was being used for which proposal. A list of proposed projects is attached. Speakers noted several areas of strong mutual interest, including water conservation, monitoring, and drought management. A project on water scarcity and economics would involve Australia in addition to the U.S. and China, and Mr. Yu from the MWR noted that coordination and planning would be particularly difficult in a multilateral project.

A theme that emerged from the discussion was the benefits of standardized collection protocols and databases that would facilitate the comparison and exchange of information.

**Table 1: Suggested projects and related information for potential collaboration between China and the U.S., November 13, 2002**

<b>Suggested Project</b>	<b>Initial or Temporary Contact</b>	<b>Propose to Collaborate</b>	<b>Probable Authority</b>	<b>Probable PRC Lead Agency</b>	<b>Probable US Lead Agency</b>	<b>Project Status</b>
A. Biodiversity Protocol	Jack Medlin, USGS	YES	?	Chinese Academy Sci.	USGS	In Discussion
B. Asian Dust Storms/Health of Humans and Coral Reefs	Ginger Garrison/Jack Medlin, USGS	YES	?	China Center of Desert Research; CAS	USGS	In Discussion
C. Environmental Mapping, Geologic Database, Ecogeological Studies	Jack Medlin, USGS	YES	USGS-PRC Earth Sci. Protocol	China Geological Survey and Ministry of Land Resources	USGS	Letter of Intent signed 3/3/2002
D. International Watershed Research Network and Database	John R. Gray/W.R. Osterkamp, USGS	? after discussion; see IRTCES	USGS-PRC Protocol on SW Hydro.	MWR/IRTECS	USGS, Others	In Discussion USGS Papers written
E. Modeling Flow and Sediment Transport Variability	John R. Gray/George Leavesley, USGS	YES	USGS-PRC Annex 4?	MWR/YRCC	USGS	Proposed
F. Automated Methods for Monitoring Flow, Sediment Transport	John R. Gray, USGS	YES	USGS-PRC Annex 4	MWR, YRCC	USGS	Proposed
G. Comparability of PRC and US Flow, Sediment, and Water-Quality Data	John R. Gray, USGS	YES	USGS-PRC Annex 4	MWR, YRCC	USGS	Paper in Progress
H. PRC-US Analogies in Flow and Sediment Transport	John R. Gray/W.R. Osterkamp, USGS; B. Wu, IRTCES	YES	USGS-PRC Annex 4	MWR, IRTCES	USGS	IRTCES Proposal
I. PRC-US Bedload Observatory	John R. Gray, USGS	YES	USGS-PRC Annex 4	MWR	USGS, Others	Proposed
J. Water Resources MOU	Sylvana Li, USDA	YES	USDA -MWR	MWR	USDA	MOU in place
K. Water-Quality Monitoring in the Yellow River	Sylvana Li, USDA	YES	USDA-MWR	MWR, SEPA	USDA-FAS, ERS	In Progress
L. Wastewater Re-use for Irrigation	Sylvana Li, USDA	YES	USDA-SEPA	SEPA, CEPF	USDA, USEPA	In Progress
M. CUACE-Compost Demo	Brain Guse, ?	YES	USDA-MOA	MOA-CAAS	USDA	In Progress
N. Joint Session on Yellow River Watershed Management in 3 <sup>rd</sup> World Water Forum	Sylvana Li, USDA	?	USDA-MWR	MWR	USDA	March 2003, Tokyo
O. Yellow River Forum on River Basin Management	Shang Hongqi, YRCC	YES	USGS-PRC Annex 4	?MWR, YRCC?	USGS	May 2003, Zhengzhou
P. 9 <sup>th</sup> International Symposium on River Sedimentation	Zhao-Yin Wang, IRTCES	YES	USGS-PRC Annex 4	MWR, YRCC	USGS	Oct 2004 Yinchang
Q Water Resources Carrying Capacity	Yu Xingjun, MWR	?	USGS-PRC Annex 1	MWR	?	Proposed

R. Water Resources Development Strategy	Yu Xingjun, MWR	?		MWR	TBD	Proposed
S. Real-time Monitoring of Water Resources Data	Yu Xingjun, MWR	YES	USGS-PRC Annex 1	MWR, YRCC	USGS	Proposed
T. Water Scarcity and Agricultural Production	Francis Tuan, USDA/ERS	YES	USDA-MWR	MWR	USDA/ERS	Proposed
U. Water Regulation	Yu Xingjun, MWR	YES		MWR	USDA-NRCS	Proposed
V. Water Pricing	Yu Xingjun, MWR	YES		MWR	USDA-FAS/ERS	Proposed
W. Drinking Water Treatment	Wang Wei Zhong, Centre/Agenda 21	YES	MoST	MOST	USDA-FAS /USEPA	Proposed
X. Water-Saving Agriculture	Wang Wei Zhong, Centre/Agenda 21	YES	MoST	MOST	USDA	Proposed
Y. Non-Point Pollution Control	Wang Wei Zhong, Centre/Agenda 21	YES	MoST	MOST		Proposed
Z. Ecosystem Rehab/Wetlands and Natural Protection Areas	Huang Xiaoguang, State Forestry Admin.	YES		State Forestry Administration	USDA/	Proposed
Z+1: Water Resources Personnel Capacity Building	Yu Xingjun, MWR	YES		MWR	USDA/FAS	Proposed

## DISCUSSION IN ESM CLOSING SESSIONS

### Role of ESM:

- Anske noted that ESM is useful, and as JCM shifts to higher-level discussion of policy, ESM should focus on working level implementation.
- Jin said the ESM should play a driving role, since senior officials and OSTP are too busy. The ESM should be positive, active and forward-looking rather than passive. Standardized reporting format for protocols will be useful, and more public exposure is need. Europeans pressure Chinese agencies to cooperate using grants. In fact, cooperation with U.S. is more significant, and is well-funded, but the process is different. Also, now China itself has more R&D funds available.
- Jin said that the frequency of ESM meetings should be kept flexible. The breakout sessions were generally speaking quite successful. May want to do case studies in future on the most successful protocols.
- Lu Xuedu asked that proposals for ESM meetings be prepared in advance, on paper, to make it easier to evaluate ideas and respond. He expressed frustration that the breakout sessions were too short to discuss things fully. Also, more stakeholders should be involved, setting things up to make actual decisions.
- Tong suggested publishing joint Executive Secretaries' "annual reports" in years that the ESM does not meet, to allow tracking of trends and making of plans.
- Jentai Yang encouraged Chinese agencies to submit project ideas to U.S. counterpart agencies earlier, since the U.S. funding cycle takes a long time to release funding for U.S. agencies' participation.

### Data Sharing:

- Chen Xiong presented MOST's plans to more systematically require Chinese government agencies to submit data to MOST for inclusion in accessible databases. It hopes to do prototype databases on climate mapping, hydrology, and agriculture, etc. One example is located at [cdc.cma.gov.cn](http://cdc.cma.gov.cn). Data in the central data center would be available to the public, although fees would be charged for some data. Also, some data is confidential. China's program in this area falls under the "973" program.
- Chen said that China was interested in doing a joint forum, joint training, or a joint laboratory with the U.S. in this area (perhaps in earth sciences or life sciences).
- Anske and Julian Wang noted that U.S. law requires free access to all data generated with government funding. He asked how open and deep MOST's initiative will be.
- Tong described the ABA's work on freedom of information in China, and suggested that the focus of any forum be on data access policy, rather than the mechanics of data collection and data sharing.
- Affleck offered to come up with a list of U.S. open source government databases.
- Frances Tuan noted that there has been progress on agro-economic data access in China. But U.S. researchers still frequently encounter problems in getting data from Chinese local governments.
- Cao said that China still has lots of rules limiting release of different kinds of data, for example hydrological data. He suggested that we try to address this issue through the ESM.

#### Joint Agriculture Centers:

- Christiansen presented again the concepts of the soil and water, and grazinglands centers.
- Yu questioned the need for two centers instead of just one. He also doubted the capacity of universities to coordinate demonstration projects that extend beyond pure research. Christiansen disagreed.
- Jin attributed disagreement on this point to the U.S. approach of not getting all the ministerial clearances lined up before running with a project.

#### Visas:

- Tong made a long presentation on problems associated with use of the waiban channel, 214(b), and SAO requirements. He asked the Chinese side for patience until the SAO processing time can be shortened. In the interim, he asked Chinese agencies to submit applications for "hard" scientists three months in advance. On 214(b), he asked agencies to seek EST's help on referrals before the first refusal. Tong emphasized that these are global, not China-specific problems.
- Tong promised to see if he could release a copy of the Technology Alert List to Chinese agencies. Also, he promised to see if the standard practice could be changed requiring a passport to stay in the Embassy's hands pending SAO clearance.

#### Open Discussion:

- SFA complained that USFS and FWS did not attend the ESM.
- The future of the Water Resources Working Group (WRWG) was discussed, given the dormancy of the WRWG, and the active and positive discussion in the Water breakout session. MWR wants the lead on the Chinese side. The Chinese side believes that the WRWG is attached to the S&T Agreement, rather than the old Environment and Development Forum. Affleck promised to coordinate on the U.S. side and come up with a U.S. response to this question.
- Li Yongwei expressed China's determination to make the Summer Institute a success, and sought additional cooperation on the public understanding of science. Bill Blanpied promised to continue to work with MOST, NSFC and CAS on this.
- Tong registered interest in improving the process for research vessel clearances for research in each other's EEZ's. One vessel was denied clearance without a satisfactory explanation in 2001, and no U.S. vessels sought clearance in 2002.

#### Closing:

- Jin said he was quite satisfied with the results of the ESM, including the frank and enthusiastic discussion of views. The breakout sessions were "more or less" forward-looking and action-oriented, and have produced a number of activities in the pipeline. Seven priority areas have contact persons for follow-up, and China hopes that the WRWG question can be sorted out so that we have active points of contact in that area as well. Discussion of the visa issue was useful and frank, and while Chinese agencies are frustrated, he hopes that the three-month SAO process will help them learn how to plan ahead further, even if the reason seems unnecessary.
- Anske noted the importance of S&T to economic development, and that the ESM had successfully followed up on the JCM. This ESM pioneered a multidisciplinary approach at the working level. Some issues such as visas cannot really be resolved by the ESM, but the candidness of our discussion shows the maturity of the relationship.

## **Namelist of the U.S. Delegation for 2002 ESM**

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Director

Office of Science and Technology Cooperation

Bureau of Oceans and International Environmental and Scientific Affairs

Department of State

Christo F. Artusio

Foreign Affairs Officer

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William Antoine Blanpied

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## **Chinese Delegation for China-US ESM 2002 (as of 08/Nov/02)**

### **1. Ministry of Science and Technology**

Mr. JIN Ju	Deputy Director-General of the Department of International Cooperation and Executive Secretary of the 10 <sup>th</sup> China-US JCM
Mr. WANG Weizhong	Director-General of China Agenda 21 Administration Center
Mr. WEI Zhiqi	Director of the Division of America and Oceania of the Department of International Cooperation
Mr. LI Yongwei	Director of the Division of Science Education of the Department of Policy, Regulations and Reform
Mr. LV Xuedu	Director of the Division of Resources and Environments of the Department of Rural and Social Development
Mr. ZHENG Fangneng	Director of Energy Division of Department of High and New Technology Development and Industrialization
Ms. WEI Qinfang	Deputy Director of the Division of Agriculture Science and Technology of the Department of Rural and Social Development
Mr. CHEN Shuoyi	Director of Hi-tech Division IV of High-Tech Research and Development Center
Mr. GENG Jiandong	Director of the Division of Administrative Affairs of High-Tech Research and Development Center
Mr. HUANG Jing	Director of Division of Strategic Development of China Agenda 21 Administration Center
Mr. CHEN Xiong	Program Officer of the Department of Basic Research
Ms. DUAN Liping	Deputy Director of the Division of International Cooperation of Institute of Scientific and Technical Information of China

### **2. Ministry of Foreign Affairs**

Mr. WANG Baodong	Deputy Director of American Division of Department of America and Oceania
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### **3. Ministry of Agriculture**

Mr. CHEN Zhixin	Deputy Director of the Division of America and Oceania of the Department of International Cooperation
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### **4. Ministry of Water Resources**

Mr. YU Xingjun	Director of the International Division of the Department of International Cooperation, Science and Technology
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### **5. Ministry of Health**

Ms. SONG Guangxia	Deputy Director of the Division S&T Achievements and Exchanges of the Department of Sciences, Technology and Education
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### **6. Ministry of Land and Resources**

Mr. MA Yongzheng	Deputy Director of the Division of International Cooperation of the Department of International Cooperation
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### **7. Ministry of Communications**

Ms. DU Li	Program Officer of the Division of Key Projects of the Department of Science, Technology and Education
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**8. Ministry of Information Industry**

Ms. LUAN Huixin      Engineer of Administrative Office of the Department of Science and Technology

**9. Chinese Academy of Sciences**

Ms. CAO Jinghua      Director of the Division of America and Oceania of International Cooperation Bureau

**10. Chinese Academy of Social Sciences**

Mr. QIU Weili      Deputy Director of the Division of America and Oceania of Foreign Affairs Bureau

**11. National Natural Science Foundation of China**

Mr. LI Ming      Deputy Director-General of the Department of Engineering and Materials Sciences

Ms. CHEN Huai      Director of the Division of America, Oceania and Eastern Europe of International Cooperation Bureau

**12. State Forestry Administration**

Mr. HUANG Xiaoguang      Director of Bilateral Division of International Cooperation Department

**13. State Environmental Protection Administration**

Ms. WANG Yanqing      Program Officer of the Department of International Cooperation

**14. State General Administration of Quality Supervision, Inspection and Quarantine**

Ms. KONG Xiaokang      Deputy Director-General of the Department of International Cooperation

**15. State Administration of Work Safety**

Mr. WANG Qinghua      Director of the Division of International Cooperation of Department of Foreign Affairs

**16. State Bureau of Surveying and Mapping**

Ms. JIANG Xiaohong      Program Officer of Foreign Affairs Office of the Department of International Cooperation

**17. China Meteorological Administration**

Mr. SHEN Xiaonong      Director-General of the Department of International Cooperation

**18. China Seismological Bureau**

Mr. ZHAO Ming      Director of the Division of Bilateral Cooperation of the Department of International Cooperation

**19. State Oceanic Administration**

Ms. WEI Yan      Program Officer of the Division of Bilateral Affairs of the Department of International Cooperation

**20. China Nonferrous Metals Industry Association**

Mr. Bian Gang      Director of the Department of International Cooperation

**(32 persons)**